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Supporting Transition of Working Scientifically Skills from KS1-KS4

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Developing the Hook!



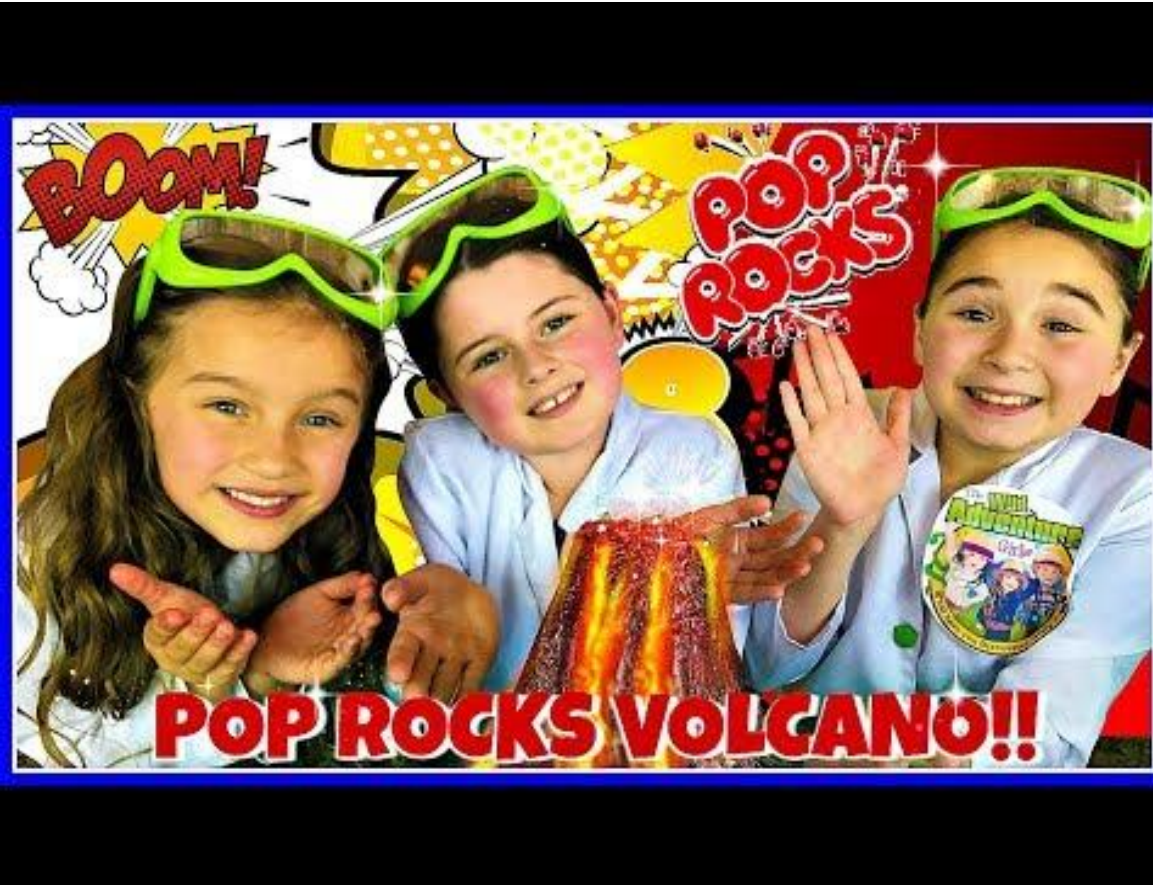
@simmsprisci
@stmarysseosci
@teachstmarys

A good science practical?



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Think about is this a useful science experiment to promote learning? Why?



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How do you promote scientific practical skills in your classroom? Share your ideas on [vevox.app](https://vevox.com) using the code on the board.



Working scientifically skills in the National Curriculum (DfE 2013)

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Working scientifically skills

- Asking questions
- Observing and measuring
- Identifying and classifying (variables)
- Gathering and recording data
- Performing tests
- Using equipment
- Reporting, presenting and communicating data/findings (evaluation/analysis)
- Planning and setting up different types of scientific enquiries (prediction)

Working scientifically in the Primary Classroom: Progression of Enquiry Skills from EYFS to KS3

The Salter Institute

Working scientifically skills – transition from KS1 – KS4



Red = KS4

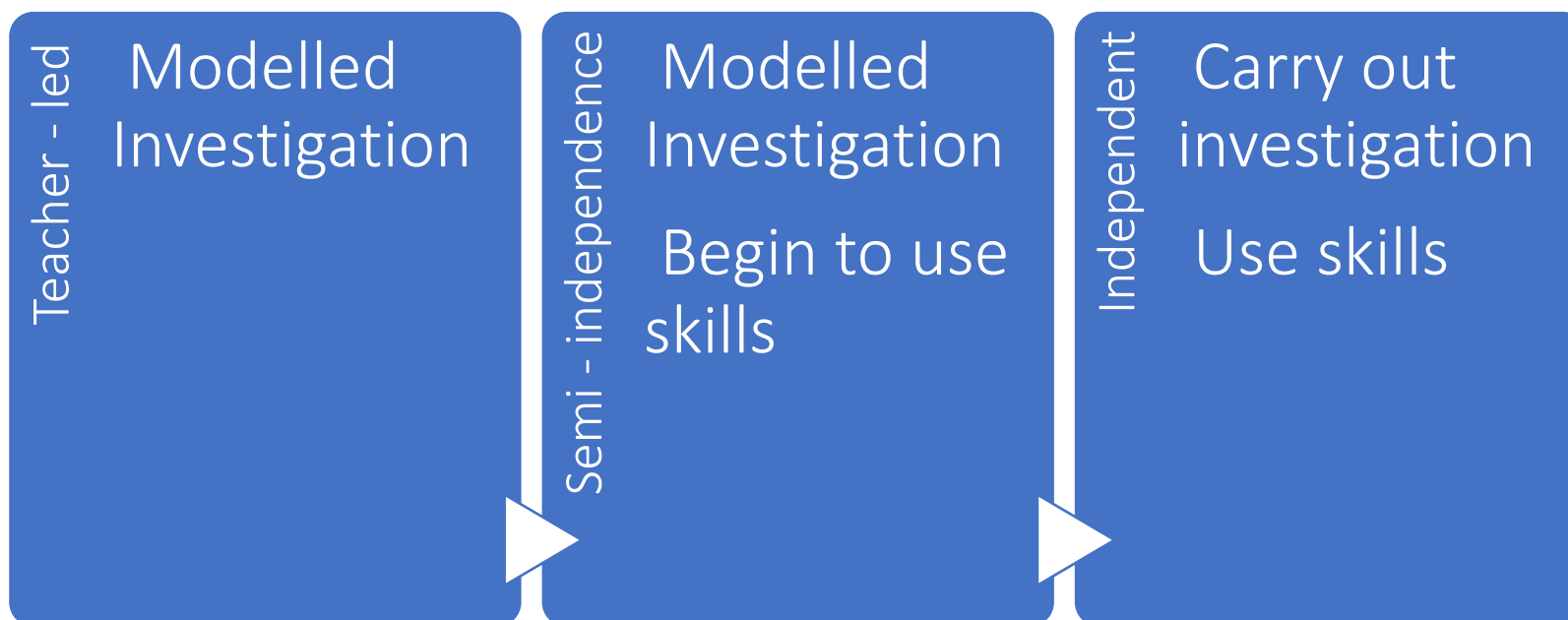
White = KS3

Orange = KS2

Yellow = KS1

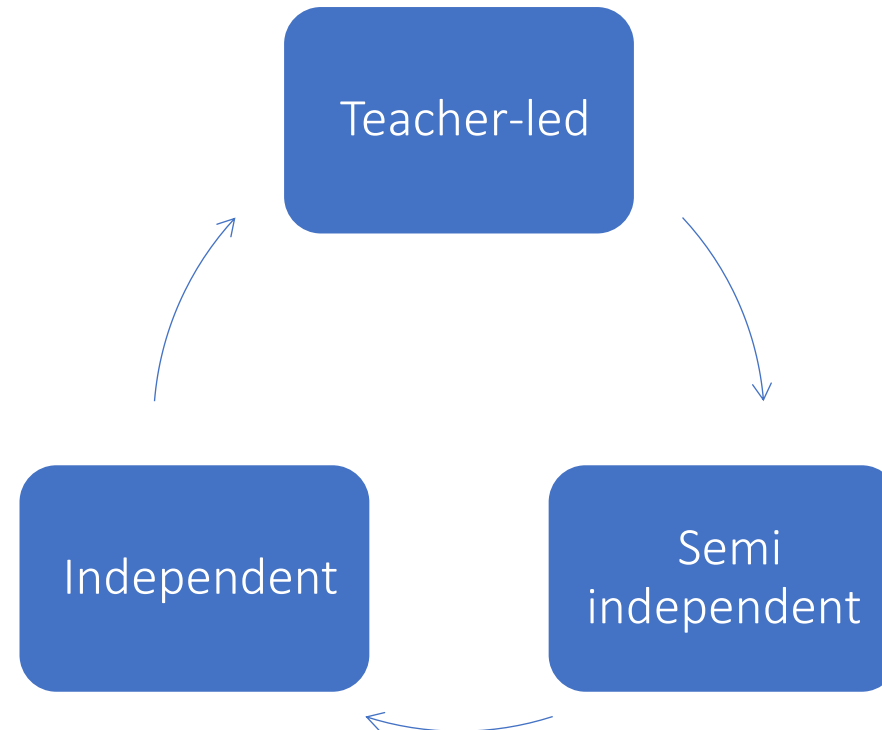


The progression of skills looks like the following continuum:



However it is not so linear it is cyclical.

When a 'new' version of a skill is introduced e.g when drawing a line-graph (recording results) for the first time this will obviously be teacher-led (modelled) despite that the child might be capable of drawing their own tables (a different version of recording).





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Using graph drawing as an example:

1. Please draw a graph of your results. Independent

2. What measurements will you be
using along the horizontal/vertical section of graph?

What should we start and finish with? Semi – independent

3. Provide students with a graph already calibrated and they plot
their answers. Teacher - led

Task constructing questions and KS links

- You have a series of example developing the hooks on the moodle page. Select the developing the hook entitled diffusing skittles.
- You have been given the working scientifically vocabulary links for lower KS2 and upper KS2. What is expected of a KS3 student. Use the KS3 science national curriculum to help.
- The plan has a question for lower key stage two and upper key stage 2. What would the question for key stage 3 look like?

Developing the Hook! Diffusing skittles

Vocabulary

Working scientifically skills/questions: Interpreting results

LKS2 Can you see a pattern in your results.

UKS2 How does the temperature of the water affect the time the sweet takes to dissolve?

Science behind it.....

The coloured dye in the skittles is soluble in water. The water molecules have kinetic energy.

This causes the dye to move. The hot water has more kinetic energy and therefore the dye travels faster across the plate.

National Curriculum links:

Lower Key Stage 2	Upper Key Stage 2
States of Matter (Year 4)	Properties and changes of materials – dissolving (Year 5)

LKS2	UKS2
I can spot patterns and refer to these when answering the questions, I set at the start of the experiment.	I can use data from primary and secondary sources to explain causal relationships

Method:

You will need:

- 4 x large plastic plates
- 1 x packet of skittles
- Water at different temperatures
- Stopwatch
- Thermometer.

1. Place different coloured skittles around the edge of the plate.
2. Add 100ml of cold water in the centre of the plate
3. Time how long it takes for the dye to diffuse - to travel to the centre of the plate.

Repeat the experiment using different temperatures of water.